BEFORE THE
ILLINOIS COMMERCE COMMISSION

IN THE MATTER OF:	)
	)
Stage 1 Investigatoin of Commonwealth Edison System Outages for the Period of July 30, 1999 to August 13, 1999.	)

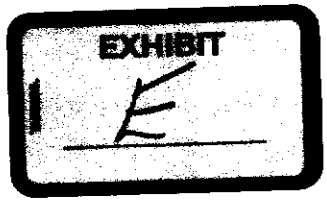
Chicago, Illinois

January 5, 2000

Met pursuant to notice at 1:30 p.m.

BEFORE:

CHAIRMAN RICHARD MATHIAS
COMMISSIONER RUTH KRETSCHMER



COMMISSIONER TERRY HARVIL
COMMISSIONER EDWARD HURLEY
COMMISSIONER RICHARD KOLHAUSER (Telephonically)

ALSO PRESENT:
Mr. Walter P. Drabinski
Vantage Consulting, Inc.

SULLIVAN REPORTING COMPANY, by
Barbara A. Richmond, CSR

MR. DRABINSKI: Our first job was to identify the outages that we needed to investigate. We selected eight outages that seem to have occurred during the period of July 30th to August 12th that appeared to be due to some type of stress from the heat and load conditions.

Six of those outages were in the City of Chicago, two were in suburban areas. I should point out while we looked at and read the September 15th reports that Commonwealth Edison issued to both the Illinois Commerce Commission and the City of

Chicago, we did not critique those reports, and did not really use much of the information in them for our analysis.

It probably is important to note that by taking a snapshot of time, and looking at certain failures or incidents that occurred during this two-week period, it gives us a chance to see how the system worked, how policies and procedures were enacted, how management and field personnel responded to given activities during the period of stress on the system. And that's really what the crux of our objective was.

We conducted 60 interviews, we visited the sites of each of the outages, we visited the transmission and dispatch, distribution dispatch centers and requested about 205 studies, reports and

pieces of information from the company. We visually inspected the materials that failed and requested complete forensic analysis of all the material that they were able to salvage, and reviewed the results of those forensic studies which were done by outside labs.

The eight outages that we looked at were actually grouped into six separate sections. Jefferson and LaSalle substations had separate outages, but because of the interaction and the outages we evaluated them together. That outage occurred on August 12th and if effected over 3,000 customers, and was due to cable failures on feeds to two transformers.

CHAIRMAN MATHIAS: If I could interrupt, that was the outage that shut down the Board of Trade?

MR. DRABINSKI: That's correct. Northwest and Newport substations both had outages that were inactive, and they occurred between July 29th and August 1st. Here 79,000 customers were effected, and it was due to a number of cables and the transformer that failed.

There were a number of fires, two fires in some manholes near the Cortland substation on August 9th and 10th, and this effected 8,000 customers the first day, and 1,000 the second. And the fires

22 caused cables to short out, and the resulting

outages. The Lakeview substation on July 30th to October 2nd, there was a number of cable failures that failed causing overloads on other cables which also failed, and resulted in a total of 10,000 customers being without service.

And then outside the City at the Burr Ridge transmission substation, a circuit breaker failed causing an outage for 11,000 customers on August 2nd. And at the Forest Park transmission substation, a cable failed and the productive relaying did not work properly, causing an outage for 13,000 customers.

So those were the eight out outages or six incidents that we grouped together. We looked at each of these incidents, looked at the specifics, what caused them, the timing, the reports of the maintenance issues that occurred, and reached quite a few findings. But also developed some overall conclusions. And I think probably for this purpose the overall conclusions are best addressed.

Our first major conclusion was that cable failures were the major contributor to customer

service interruptions during the study period. And that further the root cause of most of Com Ed's lead covered cable failures was heat induced insulation failure brought about by repeated cable overloading. In our judgment there were a number of reasons for these failures.

The most important was that Com Ed has a practice of rating the cables, or the current carrying capacity of the cables higher than what the cable manufacturers typically recommend in similar conditions. And then loading these cables even higher during periods of stress or high load. And we've had a lot of discussion about cable loadings, and overloadings, and I suggested this morning that perhaps one of the graphs that we included in our back up material could best illustrate what took place. And the graph that I think was included out on the table is actually Page 120 of the report, it's not numbered 120, it's the tenth graph in there. But this happens to be a 12,000 volt cable that comes from the Northwest substation and is labeled Line 5351.

CHAIRMAN MATHIAS: Excuse me, if I could interrupt, we marked this as Exhibit 1. This is the

exhibit that was on the table outside, available to those who are here in the hearing room in Chicago. Also these are -- this table is included in the report, which is available on the web site.

MR. DRABINSKI: If I could just familiarize you with the report or with that table, you will see in the bottom left-hand corner it starts out at 7/29/1999, 00:00 a.m., or at midnight on the 29th. It runs for four days, until midnight -- actually 000 hour on August 2nd. There are three separate colored graphs here, each of them is for three phases, because this is a three phase transformer. And you can see the loading on the left side, the 0 to 600 is the ampere loading on that set of cables. So you can see that the loading goes up the first day, comes back down a little bit, spikes again a little bit later, comes down. It goes through a series of oscillations. But what's important is -- and then, you can see right in the middle it drops down to 0, right where the 4 day

failures. And you do that by looking at which ones have been stressed repeatedly in the past.

COMMISSIONER HARVIL: I guess the point I was trying to get at is that by repeatedly operating this equipment at levels exceeding the manufacturers' recommendations for the life of the equipment, so even though we are in the middle of winter right now and it's 19 degrees outside, come June, July and August of this coming year, given how the company has operated this equipment in the past, could have long term implications into the future.

MR. DRABINSKI: Yes.

CHAIRMAN MATHIAS: But am I correct in stating that your investigation was a relatively discrete investigation, and that the Phase II and the Phase III investigation will certainly answer the question Commissioner Harvil has asked?

MR. DRABINSKI: I'm kind of giving you the academic answer that probably, in fact maybe it makes sense -- there was a chart prepared that maybe addresses what you are referring to, so if I can turn this one around.

CHAIRMAN MATHIAS: Again, if I may interrupt, this would be Exhibit 2, and this is an exhibit that is entitled Cable Load, and has three

lines on it indicating actual load, higher load rating, and manufacturers' load rating. MR. DRABINSKI: What this tries to visually show is that if you ran a cable at the manufacturers' load rating, you would get one expected length of service. If you go to a higher load rating for a continuous basis, that would be shortened. And if you ran it in an overloaded basis, that life expectancy would be shortened even longer.

COMMISSIONER HARVIL: Thank you. MR. DRABINSKI: The second area that raised some concerns for us, and this is another technical one, was the routine circuit switching during the study period in which capacitors connected to circuits which failed created surges of voltage.

What occurs, and I'll try to state this simply, is that in order to maintain quality power, reduce reactive current, and sustain a voltage levels, utilities in the past 20 to 30 years have

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Met pursuant to notice at 1:30 p.m.

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CHAIRMAN RICHARD MATHIAS
COMMISSIONER RUTH KRETSCHMER
COMMISSIONER TERRY HARVIL
COMMISSIONER EDWARD HURLEY
COMMISSIONER RICHARD KOLHAUSER (Telephonically)

ALSO PRESENT:
Mr. Carl Croskey
Commonwealth Edison Company

SULLIVAN REPORTING COMPANY, by
Michael R. Urbanski, CSR

You indicated that you received this report Monday night.

MR. CARL CROSKEY: Yes.

CHAIRMAN MATHIAS: The testimony yesterday was that you received this draft report in mid December and made comments on that report.

Did you not see that draft report.

MR. CARL CROSKEY: We saw a draft report December 10th, early in December. It did have a few of the sections missing that we got Monday and there was a new section under findings which we didn't see above nor did we see appendices either.

But frankly that's not a big deal other than to say, you know, we did have a few days to review the final report.

The final one our staff -- my staff got Monday night. I read it Tuesday.

CHAIRMAN MATHIAS: But you did receive a draft report which under the testimony yesterday was that some modest changes had been made on a factual basis as recommended by Edison.

Is that incorrect?

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MR. CARL CROSKEY: All of our changes were not made. I know that.

CHAIRMAN MATHIAS: That's what was stated yesterday.

MR. CARL CROSKEY: Yes.

CHAIRMAN MATHIAS: But you did receive a draft report in mid-December?

MR. CARL CROSKEY: Oh, yeah, yep.

CHAIRMAN MATHIAS: Thank you.

MR. CARL CROSKEY: Okay.

Now, if I can take you back a section to the executive summary in the very front and then go to the page behind ES-16. That's the very last page in the executive summary.

The page behind ES-16 is a colored page and this talks about maintenance here.

What we did is we showed -- we tried to show everything on a high level and you'll see a bunch of little electric meters.

And what we have is all the maintenance practices, again, that we identified and started and, again, I want to reinforce, we